

DIRECT TESTIMONY

of

MICHAEL McNALLY

FINANCE DEPARTMENT

FINANCIAL ANALYSIS DIVISION

ILLINOIS COMMERCE COMMISSION

Central Illinois Public Service Company, d/b/a AmerenCIPS  
and  
Union Electric Company, d/b/a AmerenUE

Docket Nos. 02-0798/03-0008/03-0009  
Consolidated

April 2, 2003

## TABLE OF CONTENTS

WITNESS IDENTIFICATION.....	1
COST OF CAPITAL.....	2
Capital Structure.....	3
Cost of Long-term Debt.....	14
Cost of Short-term Debt.....	14
Cost of Preferred Stock.....	15
Cost of Common Equity .....	16
Sample Selection.....	16
DCF Analysis.....	17
Risk Premium Analysis.....	21
Cost of Equity Recommendation.....	31
Overall Cost of Capital Recommendation.....	35
RESPONSE TO MS. McSHANE .....	35
Comparable Earnings Model.....	36
Market to Book Adjustment.....	37

**WITNESS IDENTIFICATION**

**Q. Please state your name and business address.**

A. My name is Michael McNally. My business address is 527 East Capitol Avenue,  
Springfield, IL 62701.

**Q. What is your current position with the Illinois Commerce Commission  
("Commission")?**

A. I am presently a Senior Financial Analyst in the Finance Department of the Financial  
Analysis Division.

**Q. Please describe your qualifications and background.**

A. In May of 1993, I received a Bachelor of Arts degree in Economics from the  
University of Illinois at Urbana-Champaign. In May of 1999, I received a Master of  
Business Administration degree, with a concentration in Finance, from the  
University of Illinois at Urbana-Champaign. I have been employed by the  
Commission since June 1999. I was promoted to Senior Financial Analyst in April  
of 2002.

**Q. Please state the purpose of your testimony in this proceeding.**

A. The purpose of my testimony is to present my analysis of the cost of capital of, and  
recommend an overall rate of return for, the natural gas operations of Central Illinois  
Public Service Company ("AmerenCIPS") and Union Electric Company  
("AmerenUE") (collectively, the "Companies").

**COST OF CAPITAL**

**Q. Please summarize your cost of capital findings.**

A. The overall cost of capital for AmerenCIPS equals 8.29%, as shown on Schedule 6.1 CIPS. The overall cost of capital for AmerenUE equals 8.00%, as shown on Schedule 6.1 UE.

**Q. Please define the overall cost of capital for a public utility.**

A. The overall cost of capital equals the sum of the component costs of the capital structure (i.e., debt, preferred stock, and common equity) after each is weighted by its proportion to total capital. It represents the rate of return the utility needs to earn on its assets to satisfy contractual obligations to, or the market requirements of, its investors.

**Q. Why must one determine an overall cost of capital for a public utility?**

A. A primary goal of regulation is to properly balance the interests of a utility's ratepayers and investors. This is accomplished by minimizing the cost of reliable service to ratepayers while allowing utilities to earn a fair and reasonable rate of return on rate base.

Regulators should determine an allowable rate of return for public utilities that equals the investor-required rate of return for companies with similar risk characteristics. When public utilities charge rates that reflect an authorized rate of return that exceeds the cost of capital, consumers are encumbered with excessive prices. Conversely, when public utilities charge rates that reflect an authorized rate of return below the cost of capital, the financial integrity of the utility suffers, making it

difficult for the utility to attract capital at a reasonable cost. Ultimately, the utility's inability to raise sufficient capital would impair service quality. Consumers are best served when the authorized rate of return on rate base equals the overall cost of capital.

In authorizing a rate of return on rate base equal to the overall cost of capital, all costs of service are assumed reasonable and accurately measured. If unreasonable costs continue to be incurred, or if any reasonable cost of service component is measured inaccurately, then the allowed rate of return on rate base will not balance rate payer and investor interests.

### **Capital Structure**

**Q. What capital structure did the Companies propose for setting rates?**

A. AmerenCIPS proposed using a June 30, 2002 capital structure that contains 46.927% long-term debt, 6.721% preferred stock, and 46.352% common equity, as shown on Schedule 6.1 CIPS.<sup>1</sup> AmerenUE proposed using a June 30, 2002 capital structure that contains 37.094% long-term debt, 2.594% preferred stock, and 60.312% common equity, as shown on Schedule 6.1 UE.<sup>2</sup>

**Q. Did you include short-term debt in the capital structure for AmerenCIPS?**

A. No. AmerenCIPS did not carry a monthly ending balance of total short-term debt during the 13 months from December 2001 through December 2002.<sup>3</sup> Thus, short-term debt did not play a role in the financing of AmerenCIPS' rate base during the

---

<sup>1</sup> AmerenCIPS Exhibit No. 3.2.

<sup>2</sup> AmerenUE Exhibit No. 3.2.

<sup>3</sup> Company response to Staff data request MGM 1.02.

months surrounding AmerenCIPS' chosen capital structure measurement date and should not be included in its capital structure.

**Q. Should short-term debt be included in the capital structure for AmerenUE?**

A. Yes. AmerenUE carried a monthly ending balance of total short-term debt of at least \$48,900,000 during each of the 13 months from December 2001 through December 2002.<sup>4</sup> Thus, short-term debt played a role in the financing of AmerenUE's rate base during the months surrounding AmerenUE's chosen capital structure measurement date and should be included in its capital structure.

**Q. How did you measure the balance of short-term debt for AmerenUE?**

A. Since short-term debt balances tend to fluctuate substantially during a year, any single balance might not be representative of the amount employed throughout the year. Therefore, I used an average balance. I chose the January 2002 to December 2002 period because it is centered in time at June 30, 2002, the measurement date for the other components in the capital structure. To calculate the balance of short-term debt, I first calculated the monthly ending net balance of short-term debt outstanding each month. The net balance of short-term debt is the greater of a) the monthly ending gross balance of short-term debt<sup>5</sup> outstanding minus the corresponding monthly ending balance of construction-work-in-progress ("CWIP") accruing an allowance for funds used during construction ("AFUDC") or b) CWIP accruing AFUDC times the ratio of short-term debt to total CWIP. That adjustment recognizes that the Commission's formula for calculating AFUDC

---

<sup>4</sup> Company response to Staff data request MGM 1.02.

<sup>5</sup> The gross balance of short-term debt excludes proceeds from short-term debt issuances that AmerenUE lent to other member companies of the Ameren utility money pool.

assumes short-term debt is the first source of funds financing CWIP<sup>6</sup> and addresses the double-counting concern the Commission raised in a previous Order.<sup>7</sup> Next, I calculated twelve monthly averages from the monthly ending net balances of short-term debt. Finally, I averaged the twelve monthly average net balances of short-term debt for January 2002 through December 2002. Schedule 6.3 presents the calculation of the average adjusted balance of short-term debt.

**Q. Did you make any adjustments to the Companies' preferred stock schedules?**

A. I made no changes to AmerenUE's preferred stock schedule. However, I did make one adjustment to AmerenCIPS' preferred stock schedule: I substituted the effective dividend rate AmerenCIPS currently pays on the variable rate 1993 Auction series for the average rate Mr. O'Bryan proposed.<sup>8</sup>

**Q. Please describe the adjustments you made to the Companies' debt schedules.**

A. I made the following adjustments to the debt schedule presented in AmerenCIPS Exhibit No. 3.3: (1) several issue dates were changed to reflect those shown in AmerenCIPS' 2001 Form 21 ILCC; (2) the unamortized debt discount, premium, and expense balances were adjusted to reflect the balances shown in AmerenCIPS' 2001 Form 21 ILCC less 181 days (from 12/31/2001 to 6/30/2002) of straight-line amortization; (3) the annual amortization of debt discount, premium, and expense was adjusted to reflect straight-line amortization of each issue's June 30, 2002

---

<sup>6</sup> *Uniform System of Accounts for Gas Utilities Operating in Illinois*, Gas Plant Instruction 3(A)(17). Long-term debt, preferred stock and common equity are assumed to finance CWIP balances in excess of the short-term balance according to their relative proportions to long-term capital.

<sup>7</sup> Order, Docket No. 95-0076, December 20, 1995, p. 51.

<sup>8</sup> AmerenCIPS response to Staff data request MGM 1.10.

105 unamortized balances over its remaining life; (4) the 7.5% Series X first mortgage  
106 bonds, which AmerenCIPS removed from its long-term debt schedule, was  
107 reinstated because AmerenCIPS has not satisfactorily demonstrated how it would  
108 finance that forecasted retirement; and (5) an itemization of the annual amortization  
109 of the unamortized debt expense associated with retired issues was added.

110 I made the following adjustments to the debt schedule presented on AmerenUE  
111 Exhibit No. 3.3: (1) several issue dates were changed to reflect those shown in  
112 AmerenUE's 2001 Form 21 ILCC; (2) the unamortized debt discount balance for the  
113 newly issued 5.5% Series BB was updated to reflect a sale price of 98.883% of  
114 par; (3) the unamortized debt discount, premium, and expense balances were  
115 adjusted to reflect the balances shown in AmerenUE's 2001 Form 21 ILCC less  
116 181 days (from 12/31/2001 to 6/30/2002) of straight-line amortization; (4) the annual  
117 amortization of debt discount, premium, and expense was adjusted to reflect a  
118 straight-line amortization of each issue's June 30, 2002 unamortized balances over  
119 its remaining life; and (5) the interest rates for the variable rate Environmental  
120 Improvement Bonds were adjusted to reflect the most-recently available interest  
121 rates;<sup>9</sup> (6) the interest rate for the newly issued 5.5% Series BB was updated to  
122 reflect the interest rate quoted in the prospectus for that issue; and (7) an itemization  
123 of the annual amortization of the unamortized debt expense associated with retired  
124 issues was added.

---

<sup>9</sup> The effective rates on the Environmental Improvement bonds were determined by using the March 21, 2003 Municipal Swap Index from [www.bondmarket.com](http://www.bondmarket.com), which is a 7-day high grade market index composed of tax-exempt variable rate debt obligations.

**Q. Did you make any changes to the Companies' proposed common equity balances?**

A. Yes. I reversed the adjustment Mr. O'Bryan made to AmerenUE's equity balance to remove the effects of AmerenUE's investment in its subsidiaries. His adjustment presumes that AmerenUE's investment in its subsidiaries is composed entirely of equity, which conflicts with the financial principle that all capital is fungible and therefore cannot be traced from source to use. Thus, such an adjustment should not be made unless it is legally required. Mr. O'Bryan has not identified any such legal requirement. I made no adjustment to AmerenCIPS' equity balance.

**Q. Given those adjustments, what are the Companies' June 30, 2002 capital structures?**

A. AmerenCIPS' June 30, 2002 capital structure consists of 49.12% long-term debt, 6.44% preferred stock, and 44.44% common equity, as shown on Schedule 6.1 CIPS. AmerenUE's June 30, 2002 capital structure consists of 2.18% short-term debt, 36.32% long-term debt, 2.54% preferred stock, and 58.96% common equity, as shown on Schedule 6.2.

**Q. Does capital structure affect the overall cost of capital?**

A. Yes. Financial theory suggests capital structure affects the value of a firm and, therefore, its cost of capital, to the extent it affects the expected level of cash flows that accrue to third parties (i.e., other than debt and stock holders). Employing debt as a source of capital reduces a company's income taxes,<sup>10</sup> thereby reducing the

---

<sup>10</sup> The tax advantage debt has over equity at the corporate level is partially offset at the individual investor level. Debt investors receive returns largely in the form of current income (i.e., interest). In contrast, equity investors receive returns in the form of both current income (i.e., dividends) and capital appreciation (i.e., capital gains). Taxes on capital gains are lower than taxes on interest and dividend income because capital gains tax rates are lower and taxes on capital gains are deferred until realized.

146 cost of capital; however, as reliance on debt as a source of capital increases, so  
147 does the probability of bankruptcy. As bankruptcy becomes more probable,  
148 expected payments to attorneys, trustees, accountants and other third parties  
149 increase. Simultaneously, the expected value of the income tax shield provided by  
150 debt financing declines. Beyond a certain point, a growing dependence on debt as  
151 a source of funds increases the overall cost of capital. Therefore, the Commission  
152 should not determine the overall rate of return from a utility's actual capital structure  
153 if the Commission concludes that capital structure adversely affects the overall cost  
154 of capital.

155 An optimal capital structure would minimize the cost of capital and maintain a  
156 utility's financial integrity. Unfortunately, determining whether a capital structure is  
157 optimal remains problematic because (1) the cost of capital is a continuous function  
158 of the capital structure, rendering its precise measurement along each segment of  
159 the range of possible capital structures problematic; (2) the optimal capital structure  
160 is a function of operating risk, which is dynamic; and (3) the relative costs of the  
161 different types of capital vary with dynamic market conditions. Consequently, one  
162 should determine whether the capital structure is consistent with the financial  
163 strength necessary to access the capital markets under all conditions, and if so,  
164 whether the cost of that financial strength is reasonable.

165 Towards that end, I compared the Companies' June 30, 2002 capital structures<sup>11</sup> to  
166 utility industry benchmarks. Standard & Poor's ("S&P") categorizes debt securities  
167 on the basis of the risk that a company will default on its interest or principal  
168 payment obligations. The resulting credit rating reflects both the operating and

---

<sup>11</sup> These capital structures reflect the adjustments noted previously.

financial risks of a utility.<sup>12</sup> Although no formula exists for determining a credit rating, S&P publishes utility benchmark values, by business profile score, for four financial ratios it uses to determine credit ratings, including the total debt ratio. According to S&P, AA-rated utilities with a business profile score of 3 should have a total debt to total capital ratio between 42.0% and 47.5%; A-rated utilities with a business profile score of 3 should have a total debt to total capital ratio between 47.5 to 53.0%.<sup>13</sup> AmerenCIPS' June 30, 2002 total debt ratio was 49.12%, which is well within the benchmark range for an A rating. In contrast, AmerenUE's June 30, 2002 total debt ratio was 38.50%, which is well below the low end of the benchmark range for an AA rating.

The above suggests that the June 30, 2002 capital structure for AmerenCIPS is reasonable for an A-rated utility with a business profile score of 3. In contrast, AmerenUE's June 30, 2002 capital structure contains far less debt than the target range for an AA credit rating for a utility with a business profile score of 3.

**Q. Why did you compare AmerenCIPS' and AmerenUE's June 30, 2002 total debt ratios to the published S&P benchmarks for utilities with a business profile score of 3?**

A. Since I am estimating the cost of equity for AmerenCIPS' and AmerenUE's gas distribution operations on a stand-alone basis, the Companies' business profile scores should reflect only the business risk of gas distribution without regard to the Companies' other operations. Although S&P currently assigns AmerenUE a business profile score of 4, that business profile score reflects AmerenUE's higher

---

<sup>12</sup> Standard & Poor's Utilities Rating Service: Industry Commentary, May 20, 1996, p. 1.

<sup>13</sup> Standard & Poor's, "Utilities Financial Targets are Revised," June 18, 1999.

191 risk electric generation operations. I conclude that if the effects of the higher risk  
192 electric generation operations were removed, AmerenUE would be assigned a  
193 business profile score of 3. For example, S&P currently assigns a business profile  
194 score of 3 to AmerenCIPS, which no longer owns higher risk unregulated electric  
195 generation assets. AmerenCIPS' business profile score was changed to 3 from 4  
196 shortly after AmerenCIPS transferred its electric generation assets to an affiliate.<sup>14</sup>  
197 Moreover, since most gas distribution utilities have a business profile score of 3,<sup>15</sup>  
198 imputing a business profile score of 3 to both AmerenCIPS' and AmerenUE's gas  
199 distribution operations is appropriate.

200 **Q. Why did you compare AmerenCIPS' and AmerenUE's June 30, 2002 total**  
201 **debt ratios to the published S&P benchmarks for A-rated and AA-rated**  
202 **companies, respectively?**

203 A. The current credit ratings for both AmerenCIPS and AmerenUE mirror the A– credit  
204 rating of their parent, Ameren Corporation (“Ameren”), which reflects “weakening  
205 consolidated financial measures primarily due to the assumption of \$875 million of  
206 debt in conjunction with the CILCORP acquisition.”<sup>16</sup> Ameren's credit rating, and  
207 thus the Companies' credit ratings, also reflect Ameren's ownership of an  
208 unregulated generation unit and other diversified non-utility operations. Section 9-  
209 230 of the Public Utilities Act states that the Commission shall not reflect in a utility's  
210 rates any incremental risk or increased cost of capital that is the result of the public  
211 utility's affiliation with unregulated or non-utility companies.<sup>17</sup> Therefore, the

---

<sup>14</sup> Central Illinois Public Service Company's business profile rating was upgraded on October 2, 2000. Standard & Poor's, *Utilities & Perspectives*, October 2, 2000.

<sup>15</sup> For example, the samples that Ms. McShane and I use as proxies to estimate AmerenCIPS' and AmerenUE's costs of common equity both have an average business profile score of 3.1.

<sup>16</sup> Standard and Poor's: Ratings Direct, [www.ratingsdirect.com](http://www.ratingsdirect.com), February 12, 2003.

<sup>17</sup> 220 ILCS 5/9-230.

Companies' risk level and cost of capital must be measured without regard to the effect of their affiliation with Ameren. Thus, I estimated the credit rating implied by the Companies' financial ratios on a stand-alone basis. Those ratios indicate that the financial strength of AmerenCIPS and AmerenUE is commensurate with a mid to low A rating and a very strong AA rating, respectively.

**Q. Please describe the S&P utility benchmark credit ratio analysis that led you to conclude that AmerenCIPS' and AmerenUE's financial strength is consistent with mid to low A and very strong AA corporate credit ratings, respectively, if evaluated on a stand-alone basis.**

A. S&P publishes targets for the following four financial ratios that it uses in its analysis of investor-owned utilities: (1) funds from operations ("FFO") to total debt; (2) FFO interest coverage; (3) pre-tax interest coverage; and (4) total debt to total capital.<sup>18</sup> Those financial ratios measure financial risk. S&P also publishes business profile scores, which reflect the operating risk of a utility, such as industry characteristics, the company's competitive position, and management. Utilities' business profiles are evaluated on a scale of one to ten. A rating of one denotes below average business risk. A rating of ten denotes above average business risk.<sup>19</sup> The financial targets vary with the business profile score. The lower the numeric value of the business profile score (i.e., the lower the operating risk), the lower the financial target (i.e., the higher the allowed financial risk) for a given credit rating. For example, the financial target for the ratio of total debt to total capital for an A rating ranges from 55% to 60.5% for the business profile score of 1 and ranges from 24.0% to 33.0% for the business profile score of 10. Thus, a company with a lower

---

<sup>18</sup> Standard & Poor's, "Utility Financial Targets are Revised," June 18, 1999.

<sup>19</sup> Standard & Poor's, *Corporate Ratings Criteria 2002*, [www.standardandpoors.com/ratings](http://www.standardandpoors.com/ratings), at 17.

business profile score can carry a higher proportion of debt than a company with a higher business profile score and still achieve the same credit rating, all else equal. The S&P published benchmarks for utilities with business profile scores of 3 indicate that, on a stand-alone basis, AmerenCIPS' and AmerenUE's financial strength is consistent with mid to low A and very strong AA corporate credit ratings, respectively. Table 1 presents the Companies' financial ratios for the 2001 and the 1999-2001 period average.

**Table 1:**  
**S&P Utility Benchmark Credit Ratio Analysis**

Financial Ratio	AmerenCIPS		AmerenUE		S&P Benchmarks	S&P Benchmarks
	2001	3-year average	2001	3-year average	A-rated utilities with a business profile score of 3	AA-rated utilities with a business profile score of 3
FFO to Total Debt	11.30%	18.00%	36.90%	35.37%	20.0% – 26.0%	26.0% – 31.5%
FFO Interest Coverage	2.90X	3.87X	6.60%	6.23%	3.1X – 3.9X	3.9X – 4.5X
Pretax Interest Coverage	2.80X	3.63X	6.00X	5.77X	2.8X – 3.4X	3.4X – 4.0X
Total Debt to Total Capital	49.00%	51.50%	40.00%	39.87%	47.5% – 53.0%	42.0% – 47.5%

**Q. What capital structure do you recommend for each of the Companies?**

A. For AmerenCIPS, I recommend adopting a June 30, 2002 capital structure consisting of 49.12% long-term debt, 6.44% preferred stock, and 44.44% common equity, as shown on Schedule 6.1 CIPS. For AmerenUE, I recommend adopting an imputed capital structure consisting of 2.6% short-term debt, 42.4% long-term debt, 2.3% preferred stock, and 52.7% common equity, as shown on Schedule 6.1 UE.

**Q. Why do you recommend using an imputed capital structure for AmerenUE?**

A. In my opinion, AmerenUE's June 30, 2002 capital structure, which comprises 2.18% short-term debt, 36.32% long-term debt, 2.54% preferred stock, and 58.96% common equity, is not an appropriate capital structure upon which to determine a gas distribution company's cost of capital. Such a capital structure implies a relatively low level of financial risk. However, the capital structure necessary to achieve S&P's AA-rated utilities is not so conservative. As noted previously, S&P suggests that AA-rated utilities with a business profile score of 3 should have a total debt to total capital ratio between 42.0% and 47.5%. Thus, AmerenUE's June 30, 2002 total debt ratio of 38.50% is significantly lower than the target range for an AA-rated utility. Therefore, I adjusted AmerenUE's capital structure to reflect a debt ratio within the benchmark range for an AA rating.

**Q. How did you derive AmerenUE's imputed capital structure?**

The imputed capital structure I used for AmerenUE is based on a total debt ratio of 45%, which is roughly the midpoint of the benchmark range for an AA rating for a utility with a business position of 3. I divided the 45% total debt capital between short-term and long-term debt based on the proportion of debt capital each composed in AmerenUE's actual June 30, 2002 capital structure. Short-term debt composed approximately 5.7% of AmerenUE's actual June 30, 2002 total debt capital, while long-term debt composed approximately 94.3%. Thus, short-term debt was assigned 5.7% of the 45% debt capital in the imputed capital structure, or 2.6% of total capital, and long-term debt was assigned 94.3% of the 45% debt capital in the imputed capital structure, or 42.4% of total capital. Similarly, to calculate AmerenUE's common and preferred stock ratios, I divided the 55% of non-debt capital between common and preferred stock based on the proportion of

non-debt capital each composed in AmerenUE's actual June 30, 2002 capital structure. Common stock composed approximately 95.9% of AmerenUE's actual June 30, 2002 non-debt capital, thus it was assigned 95.9% of the remaining 55% non-debt capital in the imputed capital structure, or 52.7%. Preferred stock composed approximately 4.1% of AmerenUE's actual June 30, 2002 non-common equity capital, thus it was assigned 4.1% of the remaining 55% non-debt capital in the imputed capital structure, or 2.3%. In my judgment, the resulting imputed capital structure of 2.6% short-term debt, 42.4% long-term debt, 2.3% preferred stock, and 52.7% common equity reflects a reasonable capital structure for an AA-rated utility with a business profile score of 3.

#### **Cost of Long-term Debt**

**Q. What are the Companies' embedded costs of long-term debt?**

A. As of June 30, 2002, the embedded cost of long-term debt was 6.74% for AmerenCIPS and 5.60% for AmerenUE, as shown on Schedule 6.4 CIPS and Schedule 6.4 UE, respectively. These costs reflect the adjustments to the Companies' proposed debt schedules discussed previously.

#### **Cost of Short-term Debt**

**Q. What is AmerenUE's cost of short-term debt?**

A. AmerenUE's cost of short-term debt is 1.39%. AmerenUE issues short-term debt in the form of commercial paper rated A-2 and P-1 by S&P and Moody's,

respectively.<sup>20</sup> The interest rate on commercial paper varies with grade and term to maturity. The Federal Reserve reports that the maturity of commercial paper averages thirty days.<sup>21</sup> Therefore, to estimate AmerenCIPS' cost of short-term debt, I converted the March 21, 2003 1.37% discount rate on thirty-day, A2/P2 non-financial commercial paper into an annual yield of using the following formula:<sup>22, 23</sup>

$$\text{Annual yield} = \left( \frac{\text{discount rate} \times \left( \frac{\text{days to maturity}}{360} \right)}{1 - \text{discount rate} \times \left( \frac{\text{days to maturity}}{360} \right)} \right) \times \left( \frac{365}{\text{days to maturity}} \right)$$

#### Cost of Preferred Stock

**Q. What are the Companies' embedded costs of preferred stock?**

A. The embedded cost of preferred stock is 3.99% for AmerenCIPS and 5.19% for AmerenUE, as shown on Schedules 6.5 CIPS and 6.5 UE, respectively. AmerenUE's preferred stock cost reflects the adjustment to AmerenUE's proposed preferred stock schedule discussed previously.

---

<sup>20</sup> *Standard & Poor's Utilities & Perspectives*, March 17, 2003, p. 20; Moody's Investors Service, [www.moodys.com](http://www.moodys.com), March 27, 2003.

<sup>21</sup> "About Commercial Paper and Rate Calculations," Federal Reserve Release, [www.federalreserve.gov/Releases/CP/about.htm](http://www.federalreserve.gov/Releases/CP/about.htm).

<sup>22</sup> "Commercial Paper," Federal Reserve Release, [www.federalreserve.gov/releases/cp/histrates.txt](http://www.federalreserve.gov/releases/cp/histrates.txt).

<sup>23</sup> The Federal Reserve classifies companies with no commercial paper ratings below A-2 and P-2 levels as "A2/P2." Federal Reserve Release, "About Commercial Paper and Rate Calculations," [www.federalreserve.gov/releases/cp/about.htm](http://www.federalreserve.gov/releases/cp/about.htm).

**Cost of Common Equity**

**Q. What are your estimates of the Companies' costs of common equity?**

A. My analysis indicates that the cost of common equity for AmerenCIPS' gas distribution operations ranges from 10.56% to 10.67%, with a midpoint of 10.62%; the cost of common equity for AmerenUE's gas distribution operations ranges from 10.31% to 10.42%, with a midpoint of 10.37%.

**Q. How did you measure the investor required rate of return on common equity for AmerenCIPS and AmerenUE?**

A. I measured the investor required rate of return on common equity for AmerenCIPS and AmerenUE with discounted cash flow ("DCF") and risk premium models. Since AmerenCIPS and AmerenUE do not have market-traded common stock, DCF and risk premium models cannot be applied directly to AmerenCIPS and AmerenUE; therefore, I applied both models to a sample of natural gas utility companies ("Gas Sample").<sup>24</sup>

Sample Selection

**Q. How did you select a gas sample?**

A. Since this proceeding will set rates for the Companies' gas distribution operations, under ideal circumstances the sample should reflect the risks associated with the provision of those services. Therefore, I selected a gas sample based on the following criteria. First, I began with a list of all domestic publicly-traded companies assigned an industry number of 4924 (i.e., natural gas distribution companies)

---

<sup>24</sup> Ameren Exhibit Nos. 4.0, p. 13 and 5.0, p. 14.

within *S&P Utility Compustat*. Second, I removed any company that had an S&P credit rating lower than A–. Finally, I removed any company which had neither Zacks Investment Research (“Zacks”) nor Institutional Brokers Estimate System (“IBES”) long-term growth rates. The nine remaining companies, AGL Resources, Inc.; Atmos Energy Corporation; Laclede Group, Inc.; New Jersey Resources; Nicor, Inc.; Northwest Natural Gas Company; Peoples Energy Corporation; Piedmont Natural Gas Company; and WGL Holdings, Inc., compose the Gas Sample.

**Q. Please discuss the criteria by which you selected the Gas Sample.**

A. Because it includes only companies that operate primarily as utility gas distributors, the operating risk of the Gas Sample is similar to that of AmerenCIPS’ and AmerenUE’s natural gas distribution utility business. In addition, limiting the sample to companies with S&P credit ratings of A– or better ensures that the sample has a level of financial risk and financial strength as similar as possible to those of AmerenCIPS and AmerenUE. The last criterion ensures that I have the data necessary to complete my analysis.

#### DCF Analysis

**Q. Please describe DCF analysis.**

A. For a utility to attract common equity capital, it must provide a rate of return on common equity sufficient to meet investor requirements. DCF analysis establishes a rate of return directly from investor requirements. A comprehensive analysis of a utility’s operating and financial risks becomes unnecessary to implement a DCF analysis since the market price of a utility’s stock already embodies the market consensus of those risks.

According to DCF theory, a security price equals the present value of the cash flow investors expect it to generate. Specifically, the market value of common stock equals the cumulative value of the expected stream of future dividends after each is discounted by the investor required rate of return.

**Q. Please describe the DCF model with which you measured the investor required rate of return on common equity.**

A. As it applies to common stocks, DCF analysis is generally employed to determine appropriate stock prices given a specified discount rate. Since a DCF model incorporates time-sensitive valuation factors, it must correctly reflect the timing of the dividend payments that stock prices embody. As such, incorporating stock prices that the financial market sets on the basis of quarterly dividend payments into a model that ignores the time value of quarterly cash flows constitutes a misapplication of DCF analysis.

The companies in both samples pay dividends quarterly; therefore, I applied a constant-growth DCF model that measures the annual required rate of return on common equity as follows:

$$k = \frac{\sum_{q=1}^4 D_{0,q} (1+g)(1+k)^{1-[x+0.25(q-1)]}}{P} + g.$$

where  $P$   $\equiv$  the current stock price;

$D_{0,q}$   $\equiv$  the last dividend paid at the end of quarter  $q$ ,  
where  $q = 1$  to 4;

$k$   $\equiv$  the cost of common equity;

$x$        $\equiv$       the elapsed time between the stock observation  
and first dividend payment dates, in years; and

$g$        $\equiv$       the expected dividend growth rate.

368            The expression  $(1 + k_e)^{1-[x+0.25(q-1)]}$  is a future value factor that measures the value of  
369            the expected dividend ( $D_{0,q}(1 + g)$ ) one year from the stock price measurement  
370            date. The DCF model above assumes dividends will grow at a constant rate, and  
371            the market value of common stock (i.e., stock price) equals the sum of the  
372            discounted value of each dividend.

373        **Q.      How did you estimate the growth rate parameter?**

374        A.      Determining the market-required rate of return with the DCF methodology requires  
375            a growth rate that reflects the expectations of investors. Although the current market  
376            price reflects aggregate investor expectations, market-consensus expected growth  
377            rates cannot be measured directly. Therefore, I measured market-consensus  
378            expected growth indirectly with growth rates forecasted by securities analysts that  
379            are disseminated to investors.

380            IBES and Zacks summarize and publish the earnings growth expectations of  
381            financial analysts employed by the research departments of investment brokerage  
382            firms. Both provide forward-looking, expectational estimates of earnings growth.  
383            Therefore, I averaged the IBES and Zacks growth rate estimates to measure  
384            market-consensus expected growth. Schedule 6.7 presents the analysts' growth  
385            rate estimates for the companies in the Gas Sample.

**Q. How did you measure the stock price?**

A. A current stock price reflects all information that is available and relevant to the market; thus, it represents the market's assessment of the common stock's current value. I measured each company's current stock price with its closing market price from March 21, 2003. Those stock prices appear on Schedule 6.8.

Since current stock prices reflect the market's current expectation of the cash flows the securities will produce and the rate at which those cash flows are discounted, an observed change in the market price does not necessarily indicate a change in the required rate of return on common equity. Rather, a price change may reflect investors' re-evaluation of the expected dividend growth rate. In addition, stock prices change with the approach of dividend payment dates. Consequently, when estimating the required return on common equity with the DCF model, one should measure the expected dividend yield and the corresponding expected growth rate concurrently. Using an historical stock price along with current growth expectations or combining an updated stock price with past growth expectations will likely produce an inaccurate estimate of the market-required rate of return on common equity.

**Q. Please explain the significance of the column titled "Next Dividend Payment Date" shown on Schedule 6.8.**

A. Estimating year-end dividend values requires measuring the length of time between each dividend payment date and the first anniversary of the stock observation date. For the first dividend payment, that length of time is measured from the "Next Dividend Payment Date." Subsequent dividend payments occur in quarterly intervals.

**Q. How did you estimate the next four expected quarterly dividends?**

A. Most utilities declare and pay the same dividend per share for four consecutive quarters before adjusting the rate. Consequently, I assumed the dividend rate will adjust during the same quarter it changed during the preceding year. If the utility did not change its dividend during the last year, I assumed the rate would change during the next quarter. The average expected growth rate was applied to the current dividend rate to estimate the expected dividend rate.<sup>25</sup> Schedule 6.8 presents the current quarterly dividends. Schedule 6.9 presents the expected quarterly dividends.

**Q. Based on your DCF analysis, what is the estimated required rate of return on common equity for the Gas Sample?**

A. The DCF analysis estimated a required rate of return on common equity of 10.56% for the Gas Sample, as shown on Schedule 6.10. That result represents an average of the DCF estimates for the individual companies in the Gas sample, which are derived from the growth rates presented on Schedule 6.7, the stock price and dividend payment dates presented on Schedule 6.8, and the expected quarterly dividends presented on Schedule 6.9.

#### Risk Premium Analysis

**Q. Please describe the risk premium model.**

A. The risk premium model is based on the theory that the market-required rate of return for a given security equals the risk-free rate of return plus a risk premium

---

<sup>25</sup> Unless the next dividend has already been declared and differs from the previous dividend, in which case, the declared dividend value is entered. This was the case for both Nicor, Inc. and WGL Holdings, Inc.

associated with that security. A risk premium represents the additional return investors expect in exchange for assuming the risk inherent in an investment. Mathematically, a risk premium equals the difference between the expected rate of return on a risk factor and the risk-free rate. If the risk of a security is measured relative to a portfolio, then multiplying that relative measure of risk and the portfolio's risk premium produces a security-specific risk premium for that risk factor.

The risk premium methodology is consistent with the theory that investors are risk-averse. That is, investors require higher returns to accept greater exposure to risk. Thus, if investors had an opportunity to purchase one of two securities with equal expected returns, they would purchase the security with less risk. Conversely, if investors had an opportunity to purchase one of two securities with equal risk, they would purchase the security with the higher expected return. In equilibrium, two securities with equal quantities of risk have equal required rates of return.

The Capital Asset Pricing Model ("CAPM") is a one-factor risk premium model that mathematically depicts the relationship between risk and return as:

$$R_j = R_f + b_j \times (R_m - R_f)$$

where  $R_j$   $\equiv$  the required rate of return for security  $j$ ;

$R_f$   $\equiv$  the risk-free rate;

$R_m$   $\equiv$  the expected rate of return for the market portfolio; and

$b_j$   $\equiv$  the measure of market risk for security  $j$ .

In the CAPM, the risk factor is market risk, which is defined as risk that cannot be eliminated through portfolio diversification. To implement the CAPM, one must estimate the risk-free rate of return, the expected rate of return on the market portfolio, and a security or portfolio-specific measure of market risk.

**Q. How did you estimate the risk-free rate of return?**

A. I examined the suitability of the yields on three-month U.S. Treasury bills and thirty-year U.S. Treasury bonds as estimates of the risk-free rate of return.

**Q. Why did you examine the yields on U.S. Treasury bills and bonds as measures of the risk-free rate?**

A. The proxy for the nominal risk-free rate should contain no risk premium and reflect similar inflation and real risk-free rate expectations to the security being analyzed through the risk premium methodology.<sup>26</sup> The yields of fixed income securities include premiums for default and interest rate risk. Default risk pertains to the possibility of default on principal or interest payments. Securities of the United States Treasury are virtually free of default risk by virtue of the federal government's fiscal and monetary authority. Interest rate risk pertains to the effect of unexpected interest rate fluctuations on the value of securities.

Since common equity theoretically has an infinite life, its market-required rate of return reflects the inflation and real risk-free rates anticipated to prevail over the long run. U.S. Treasury bonds, the longest term treasury securities, were issued with terms to maturity of thirty years;<sup>27</sup> U.S. Treasury notes are issued with terms to

---

<sup>26</sup> Real risk-free rate and inflation expectations comprise the non-risk related portion of a security's rate of return.

<sup>27</sup> In October 2001, the U.S. Treasury suspended the issuance of 30-year U.S. Treasury bonds.

maturity ranging from two to ten years; U.S. Treasury bills are issued with terms to maturity ranging from ninety-one days to sixth months. Therefore, U.S. Treasury bonds are more likely to incorporate within their yields the inflation and real risk-free rate expectations that drive, in part, the prices of common stocks than either U.S. Treasury notes or Treasury bills.

However, due to relatively long terms to maturity, U.S. Treasury bond yields also contain an interest rate risk premium that diminishes their usefulness as measures of the risk-free rate. U.S. Treasury bill yields contain a smaller premium for interest rate risk. Thus, in terms of interest rate risk, U.S. Treasury bill yields more accurately measure the risk-free rate.

**Q. Given the similarity in the inflation and real risk-free rate expectations that are reflected in the yields on U.S. Treasury bonds and the prices of common stocks, does it necessarily follow that the inflation and real risk-free rate expectations that are reflected in the yields on U.S. Treasury bills and the prices of common stocks are dissimilar?**

A. No. To the contrary, short and long-term inflation and real risk-free rate expectations, including those that are reflected in the yields on U.S. Treasury bills, U.S. Treasury bonds, and the prices of common stocks, should equal over time. Any other assumption implausibly implies that the real risk-free rate and inflation is expected to systematically and continuously rise or fall.

Although expectations for short and long-term real risk-free rates and inflation should equal over time, in finite time periods, short and long-term expectations may differ. Short-term interest rates tend to be more volatile than long-term interest

491 rates.<sup>28</sup> Consequently, over time U.S. Treasury bill yields are less biased (i.e., more  
492 accurate) but less reliable (i.e., more volatile) estimators of the long-term risk-free  
493 rate than U.S. Treasury bond yields. In comparison, U.S. Treasury bond yields are  
494 more biased (i.e., less accurate) but more reliable (i.e., less volatile) estimators of  
495 the long-term risk-free rate. Therefore, an estimator of the long-term nominal risk-  
496 free rate should not be chosen mechanistically. Rather, the similarity in current short  
497 and long-term nominal risk-free rates should be evaluated. If those risk-free rates  
498 are similar, then U.S. Treasury bill yields should be used to measure the long-term  
499 nominal risk-free rate. If not, some other proxy or combination of proxies should be  
500 used.

501 **Q. What is the current yield on three-month U.S. Treasury bills and the current**  
502 **estimated yield on thirty-year U.S. Treasury bonds?**

503 A. Three-month U.S. Treasury bills are currently yielding 1.18%. The estimated yield  
504 for U.S. Treasury bonds equals 5.24%.<sup>29</sup> Both estimates are derived from quotes  
505 for March 21, 2003.<sup>30</sup> Schedule 6.11 presents the published quotes and effective  
506 yields.

---

<sup>28</sup> Fabozzi and Pollack, ed., *The Handbook of Fixed Income Securities*, Fourth Edition, Irwin, p. 789.

<sup>29</sup> Since the suspension of the 30-year U.S. Treasury bond, the U.S. Treasury publishes a Long-Term Average Rate, which represents the arithmetic average of the bid yields on all outstanding fixed-coupon securities with 25 years or more remaining to maturity. Additionally, the U.S. Treasury publishes daily linear extrapolation factors that can be added to the Long-Term Average Rate to estimate a 30-year rate. [www.treas.gov/offices/domestic-finance/debt-management/interest-rate/ltcompositeindex.html](http://www.treas.gov/offices/domestic-finance/debt-management/interest-rate/ltcompositeindex.html)

<sup>30</sup> The Federal Reserve Board, *Federal Reserve Statistical Release: Selected Interest Rates, H.15 Daily Update*, [www.federalreserve.gov/releases/H15/update/](http://www.federalreserve.gov/releases/H15/update/), March 24, 2003.

**Q. Of the U.S. Treasury bill and bond yields, which is currently a better proxy for the long-term risk-free rate?**

A. In terms of the gross domestic product ("GDP") price index, the Energy Information Administration ("EIA") forecasts the inflation rate will average 2.5% annually during the 2003-2025 period.<sup>31</sup> In comparison, Global Insight forecasts the GDP price index will average 2.6% annually during the 2003-2027 period.<sup>32</sup> In terms of the consumer price index ("CPI"), the *Survey of Professional Forecasters* ("Survey") forecasts the inflation rate will average 2.5% during the next ten years.<sup>33</sup> In terms of real GDP growth, EIA forecasts the real risk-free rate will average 3.1% during the 2003-2025 period.<sup>34</sup> Global Insight forecasts the real risk-free rate will average 3.2% during the 2003-2027 period.<sup>35</sup> The *Survey* forecasts real GDP growth will average 3.2% during the next ten years.<sup>36, 37</sup> Those forecasts imply a long-term, nominal risk-free rate between 5.7% and 6.3%.<sup>38</sup> Therefore, EIA, Global Insight, and *Survey* forecasts of inflation and real GDP growth expectations suggest that, currently, the U.S. Treasury bond yield more closely approximates the long-term

---

<sup>31</sup> Energy Information Administration, *EIA Annual Energy Outlook*, Table 20, Macroeconomic Indicators, December 2002.

<sup>32</sup> Global Insight, "The U.S. Economy: The 25 Year Focus," Table 15, Fall 2002.

<sup>33</sup> *Survey of Professional Forecasters*, Federal Reserve Bank of Philadelphia, [www.phil.frb.org/files/spf/survq103.html](http://www.phil.frb.org/files/spf/survq103.html), February 24, 2003. The *Survey* aggregates the forecasts of approximately thirty forecasters.

<sup>34</sup> Energy Information Administration, *EIA Annual Energy Outlook*, Table 20, Macroeconomic Indicators, December 2002.

<sup>35</sup> Global Insight, "The U.S. Economy: The 25 Year Focus," Table 1, Fall 2002.

<sup>36</sup> *Survey of Professional Forecasters*, Federal Reserve Bank of Philadelphia, [www.phil.frb.org/files/spf/survq103.html](http://www.phil.frb.org/files/spf/survq103.html), February 24, 2003.

<sup>37</sup> Historically, the realized interest rate return premium averaged 1.4% during the last 75 years (Ibbotson Associates, *Stocks, Bonds, Bills, and Inflation, 2002 Yearbook*, p. 169).

<sup>38</sup> Nominal interest rates are calculated as follows:

$$r = (1 + R) \times (1 + i) - 1.$$

where  $r$  = nominal interest rate;  
 $R$  = real interest rate; and  
 $i$  = inflation rate.

risk-free rate. It should be noted, however, the U.S. Treasury bond yield is an upwardly biased estimator of the long-term risk-free rate due to the inclusion of an interest rate risk premium associated with its relatively long term to maturity.

**Q. Please explain why the real risk-free rate and the GDP growth rate should be similar.**

A. Risk-free securities provide a rate of return sufficient to compensate investors for the time value of money, which is a function of production opportunities, time preferences for consumption, and inflation.<sup>39</sup> The real risk-free rate excludes the premium for inflation. The real GDP growth rate measures output of goods and services without reflecting inflation expectations and, as such, also reflects both production and consumers' consumption preferences. Therefore, both the real GDP growth rate and the real risk-free rate of return should be similar since both are a function of production opportunities and consumption preferences without the effects of either a risk premium or an inflation premium.

**Q. How was the expected rate of return on the market portfolio estimated?**

A. The expected rate of return on the market was estimated by conducting a DCF analysis on the firms composing the S&P 500 Index ("S&P 500") as of December 31, 2002. That analysis used dividends information reported in the January 2003 edition of S&P's *Security Owner's Stock Guide* and closing market prices reported by the Chicago Board of Options Exchange on January 2, 2003. Growth rate estimates were obtained from the December 2002 edition of *IBES Monthly Summary Data*<sup>40</sup> and February 2, and February 20, 2003 Zacks reports. Firms not

---

<sup>39</sup> Brigham and Houston, *Fundamentals of Financial Management*, 8<sup>th</sup> edition.

<sup>40</sup> The January 2003 edition of *IBES Monthly Summary Data* was used for companies omitted in the December 2002 edition.

544 paying a dividend as of December 31, 2002, or for which neither IBES nor Zacks  
545 growth rates were available were eliminated from the analysis. The resulting  
546 company-specific estimates of the expected rate of return on common equity were  
547 then weighted using market value data from the Chicago Board of Options  
548 Exchange on January 20, 2003. The estimated weighted average expected rate of  
549 return for the remaining 350 firms, composing 81.18% of the market capitalization  
550 of the S&P 500, equals 14.29%.

551 **Q. How did you measure market risk on a security-specific basis?**

552 A. Beta measures risk in a portfolio context. When multiplied by the market risk  
553 premium, a security's beta produces a market risk premium specific to that security.  
554 I used Value Line's betas and a regression analysis to estimate the beta of the Gas  
555 Sample.

556 Value Line estimates beta for a security with the following model using an ordinary  
557 least-squares technique:<sup>41</sup>

558 
$$R_{j,t} = a_j + b_j \times R_{m,t} + e_{j,t}$$

where  $R_{j,t} \equiv$  the return on security  $j$  in period  $t$ ,

$R_{m,t} \equiv$  the return on the market portfolio in period  $t$ ,

$a_j \equiv$  the intercept term for security  $j$ ;

$b_j \equiv$  beta, the measure of market risk for security  $j$ ; and

---

<sup>41</sup> Statman, Meir, "Betas Compared: Merrill Lynch vs. Value Line", *The Journal of Portfolio Management*, Winter 1981.

$e_{j,t}$   $\equiv$  the residual term in period  $t$  for security  $j$ .

559 A beta can be calculated for firms with market-traded common stock. Value Line  
560 calculates its betas in two steps. First, the returns of each company are regressed  
561 against the returns of the New York Stock Exchange Composite Index ("NYSE  
562 Index") to estimate a raw beta. The regression analysis employs 260 weekly  
563 observations of stock return data. Then, an adjusted beta is estimated through the  
564 following equation:

565 
$$b_{adjusted} = 0.35 + 0.67 \times b_{raw}.$$

566 The regression analysis applies an ordinary least-squares technique to the following  
567 model to estimate beta for a security or portfolio of securities.

568 
$$R_{j,t} - R_{f,t} = a + b (R_{m,t} - R_{f,t}) + \varepsilon_t$$

where  $R_{j,t}$   $\equiv$  the return on security  $j$  in period  $t$ ,

$R_{f,t}$   $\equiv$  the risk-free rate of return in period  $t$ ,

$R_{m,t}$   $\equiv$  the return on the market portfolio in period  $t$ ,

$a$   $\equiv$  the intercept term for security  $j$ ;

$b$   $\equiv$  beta, the measure of market risk for security  $j$ ; and

$\varepsilon_t$   $\equiv$  the residual term in period  $t$  for security  $j$ .

569 The beta estimate for the LDC Sample was calculated in three steps using  
570 regression analysis. First, the U.S. Treasury bill return was subtracted from the

average percentage change in the sample's stock prices and the percentage change in the NYSE Index to estimate the portfolio's return in excess of the risk-free rate. Second, the excess returns of the LDC Sample were regressed against the excess returns of the NYSE Index to estimate a raw beta. The regression analysis employs sixty monthly observations of stock and U.S. Treasury bill return data. Third, an adjusted beta is estimated through the following equation:

$$b_{adjusted} = 0.33743 + 0.66257 \times b_{raw}.$$

**Q. Why did you adjust the raw beta estimate?**

A. I adjusted the raw beta estimate for two reasons. First, betas tend to regress towards the market mean value of 1.0 over time; therefore, the adjustment represents an attempt to estimate a forward-looking beta. Second, empirical tests of the CAPM suggest that the linear relationship between risk, as measured by raw beta, and return is flatter than the CAPM predicts. That is, securities with raw betas less than one tend to realize higher returns than the CAPM predicts. Conversely, securities with raw betas greater than one tend to realize lower returns than the CAPM predicts. Adjusting the raw beta estimate towards the market mean value of 1.0 compensates for the observed flatness in the linear relationship between risk and return.<sup>42</sup>

---

<sup>42</sup> Litzenberger, Ramaswamy and Sosin, "On the CAPM Approach to the Estimation of A Public Utility's Cost of Equity Capital," *Journal of Finance*, May 1980.

589 **Q. What is the beta estimate for the Gas Sample?**

590 A. The average Value Line adjusted beta for the Gas Sample is 0.69. The regression  
591 beta estimate for the Gas Sample is 0.50. The average of those two estimates is  
592 0.60.

593 **Q. What required rate of return on common equity does the risk premium**  
594 **model estimate for Gas Sample?**

595 A. The risk premium model estimates a required rate of return on common equity of  
596 10.67% for the Gas Sample. The computation of that estimate appears on  
597 Schedule 6.11.

598 Cost of Equity Recommendation

599 **Q. Based on your entire analysis, what are your estimates of the costs of**  
600 **common equity for AmerenCIPS' and AmerenUE's gas operations?**

601 A. A thorough analysis of the required rate of return on common equity requires both  
602 the application of financial models and the analyst's informed judgment. An  
603 estimate of the required rate of return on common equity based solely on judgment  
604 is inappropriate. Nevertheless, because techniques to measure the required rate of  
605 return on common equity necessarily employ proxies for investor expectations,  
606 judgment remains necessary to evaluate the results of such analyses. Along with  
607 DCF and risk premium cost of equity analyses, I have considered the observable  
608 6.61% rate of return the market currently requires on less risky A-rated long-term  
609 debt.<sup>43</sup> Based on my analysis, in my judgment the investor required rate of return on

---

<sup>43</sup> The Value Line Investment Survey, Selection & Opinion, March 21, 2003. The Value Line Investment Survey does not publish a 25/30-year AA-rated bond yield.

common equity for AmerenCIPS' gas distribution operations ranges from 10.56% to 10.67%, with a recommended midpoint of 10.62%; the investor required rate of return on common equity for AmerenUE's gas distribution operations ranges from 10.31% to 10.42%, with a recommended midpoint of 10.37%.

**Q. Please summarize how you formed the range for the investor required rate of return on common equity for AmerenCIPS.**

A. The low end of the range of my investor required rate of return on common equity for AmerenCIPS, 10.56%, is based on the DCF-derived results for the Gas Sample. The high end, 10.67%, is based on the risk premium-derived results for the Gas Sample. The models from which the individual company estimates were derived are correctly specified and thus contain no source of bias. Moreover, I am unaware of bias in my proxy for investor expectations.<sup>44</sup> In addition, measurement error has been minimized through the use of a sample, since estimates for a sample as a whole are subject to less measurement error than individual company estimates.

**Q. Please summarize how you formed the range for the investor required rate of return on common equity for AmerenUE.**

A. The range of my investor required rate of return on common equity for AmerenUE was derived in a similar fashion as that of AmerenCIPS; however, AmerenUE's cost of common equity range was shifted downward by 25 basis points to reflect the lower risk of AmerenUE relative to the Gas Sample. Thus, the range of my investor required rate of return on common equity for AmerenUE is 10.31% to 10.42%.

---

<sup>44</sup> Except as discussed above in regard to U.S. Treasury bond yields as proxies for the long-term risk-free rate.

631 **Q. Why did you adjust your estimate of AmerenUE's cost of common equity**  
632 **downward from your estimate for that of AmerenCIPS?**

633 A. The Gas Sample serves as a proxy for the target company, AmerenUE, and should  
634 therefore reflect the risks of AmerenUE. If the proxy does not accurately reflect the  
635 risk level of the target company, an adjustment should be made. Therefore, a  
636 review of the relative risks of the Gas Sample and AmerenUE is required. The  
637 average credit rating and business profile score for the Gas Sample were  
638 approximately A and 3.1, respectively, as shown on Schedule 6.6. As discussed  
639 previously, the financial ratios and business risk imply a credit rating of AA+ and a  
640 business profile score of 3 for AmerenUE's gas distribution operations, on a stand-  
641 alone basis. The Gas Sample's lower average credit rating suggests a higher level  
642 of risk for the Gas Sample relative to that of AmerenUE's gas distributions  
643 operations. Financial theory posits that investors require higher returns to accept  
644 greater exposure to risk. Conversely, the investor required return is lower for  
645 investments with less exposure to risk. Thus, in my opinion, given the considerable  
646 difference between the implied credit rating for AmerenUE on a stand-alone basis  
647 and the average credit rating for the Gas Sample, an adjustment is required.

648 **Q. Why is the difference in risk between the Gas Sample and AmerenUE not**  
649 **already accounted for through your recommended adjustment to**  
650 **AmerenUE's capital structure?**

651 A. As explained previously, I recommended adjusting AmerenUE's capital structure  
652 because AmerenUE's total debt ratio is significantly lower than the debt ratio target  
653 range for AA-rated companies (i.e., in isolation, AmerenUE's capital structure  
654 reflects a credit rating in the AAA range). The capital structure adjustment I  
655 recommend establishes a reasonable capital structure for an AA-rated utility with a

business profile of 3. Thus, despite the adjustment to AmerenUE's capital structure, the imputed level of financial risk of the Gas Sample remains considerably higher relative to that of AmerenUE, given the Gas Sample's average credit rating of A. Therefore, to establish a reasonable cost of equity estimate for AmerenUE, an adjustment to the cost of equity of the Gas Sample remains necessary.

**Q. How did you establish the 25 basis point adjustment used to determine AmerenUE cost of equity estimate?**

A. The 25 basis point adjustment reflects the spread between A-rated and AA-rated long-term utility debt yields.<sup>45</sup> In my judgment, this is a reasonable level of adjustment, since the average credit rating of the Gas Sample is A and AmerenUE's adjusted capital structure reflects a credit rating of AA.

**Q. Should the investor-required rate of return on common equity be adjusted for issuance costs?**

A. No. Both Companies acknowledge that they do not have any specific costs of issuing common equity recorded on their books and records for which they are requesting compensation in this proceeding.<sup>46</sup> Without any such verification, no adjustment should be made.

---

<sup>45</sup> Reuters Corporate Spreads for Utilities, [www.bondsonline.com](http://www.bondsonline.com), March 26, 2003.

<sup>46</sup> AmerenCIPS response to Staff data request MGM 1.12 and AmerenUE response to Staff data request MGM 1.11.

**Overall Cost of Capital Recommendation**

**Q. What are the overall costs of capital for the Companies?**

A. As shown on Schedule 6.1 CIPS, AmerenCIPS' overall cost of capital equals 8.29%. That estimate incorporates the midpoint cost of common equity of 10.62%.  
As shown on Schedule 6.1 UE, AmerenUE's overall cost of capital equals 8.00%.  
That estimate incorporates the midpoint cost of common equity of 10.37%.

**RESPONSE TO MS. McSHANE**

**Q. Please evaluate Ms. McShane's analyses of AmerenCIPS' and AmerenUE's costs of common equity.**

A. Ms. McShane's analysis contains two significant errors that lead her to over-estimate AmerenCIPS' and AmerenUE's costs of common equity:

1. She uses the Comparable Earnings approach to determine the cost of common equity for AmerenCIPS' and AmerenUE's gas distribution operations, although that model ignores investor return requirements.
2. She inappropriately adjusts her DCF and risk premium results to compensate for an alleged difference between market value and book value, including a flotation cost adjustment.

**Comparable Earnings Model**

**Q. Please describe Ms. McShane's comparable earnings model.**

A. Ms. McShane's comparable earnings model uses the average historical earned return on book value of common equity for a proxy group of 35 consumer-oriented industrial companies over the period 1992-2001. The average achieved return for those 35 companies was approximately 17.5-18.5%, which she deemed to be a reasonable proxy for the required rate of return for that sample. To estimate the required return for a typical gas distribution utility, she adjusted her estimate for the 35 consumer-oriented industrial companies to reflect the lower risk of her sample of eight local gas distribution companies ("LDC sample"), as measured by the groups' median Value Line betas (0.85 for the 35 consumer-oriented industrial companies and 0.65 for the LDC sample). With that adjustment, her estimate of the required rate of return for the LDC sample was 14.75-15.0%.

**Q. Briefly explain the shortcomings of Ms. McShane's Comparable Earnings methodology.**

A. Ms. McShane's comparable earnings methodology is based on the erroneous assumption that earned returns on book equity are acceptable substitutes for investor required returns. Investor required returns are only loosely related to accounting returns; they are certainly not interchangeable. For example, the return on book value of common equity is entirely unaffected by changes in investor required rate of return. That is, due to a decline in risk, risk premiums, or the time value of money, investors would bid up the price of a stock, thereby reducing the implied required rate of return, but the anticipated return on book equity would not change.

**Q. Has the Commission ruled on the use of the comparable earnings model in determining a company's cost of capital before?**

A. Yes. A Company witness presented this type of analysis in AmerenCIPS and AmerenUE's initial delivery service tariff case, Docket No. 99-0121. The Commission Order from that proceeding states that "the Commission is of the opinion that the comparable earning method advanced by Ameren does not produce a reliable return for ratemaking purposes." In addition, the Order states that "the Commission has consistently used and adopted estimates based on DCF and CAPM models and has not been presented with any reason to depart from this practice."<sup>47</sup>

**Q. Are there any significant differences between the comparable earnings models rejected by the Commission in past cases and the one presented by Ms. McShane?**

A. No. Both are based on earned returns on book equity as substitutes for investor required returns. Thus, the Commission should disregard Ms. McShane's comparable earnings analysis.

### **Market to Book Adjustment**

**Q. Please summarize Ms. McShane's rationale for the adjustment she applied to her DCF and CAPM cost of equity estimates.**

A. Ms. McShane argues that if the market value of equity differs significantly from the book values, adjusting a cost of equity estimate derived from market values is necessary when that estimate is to be applied to book values of equity to determine

---

<sup>47</sup> Order, Docket No. 99-0121, August 25, 1999, p. 68.

utility rates. The underlying rationale is that the total dollar return an investor would receive from applying a market value-derived cost of equity to a book value rate base would be insufficient to meet his required return on an investment purchased at market price, if the market price of the investment is higher than its book value.<sup>48</sup> Ms. McShane claims that an adjustment is warranted for her DCF- and risk-premium-derived cost of equity estimates in the instant docket because: 1) both methodologies produce market-based cost of equity estimates; 2) the Commission applies its cost of equity estimate to book value rate base; and 3) the market values of common equity for her LDC sample companies are, on average, approximately 179% of their book values.

**Q. What is the fundamental problem with market to book adjustments?**

A. Market to book adjustments such as Ms. McShane's are based on the flawed argument that a market-derived required rate of return does not produce a "fair" return when applied to a book value rate base if the market to book value ratio differs from one. The crucial flaw in that argument is that it equates secondary investing (i.e., the purchase of existing shares of stock from other investors) with primary investing (i.e., the purchase of new shares of stock directly from the company or the retention of earnings for reinvestment). The former does not affect the amount of money available to the company to buy assets because the proceeds from the sale go to the previous stockholder, not to the company. Thus, a rise in the price of existing common stock traded in secondary markets does not increase the amount of capital actually serving customers. It only reveals that investors' expectations for the future cash flows of the company have risen or that their required rate of return has fallen. In contrast, primary investment directly contributes

---

<sup>48</sup> AmerenCIPS Exhibit No. 4.0, pp. 28-32 and AmerenUE Exhibit No. 4.0, pp. 28-32.

capital to the company that is available to buy assets to serve customers. Under original cost ratemaking, ratepayers provide a return only on the amount of capital that is invested in assets that serve ratepayers. It is neither fair nor appropriate to inflate that return to compensate investors for capital not invested in plant and equipment; moreover, such an adjustment would render the establishment of original cost rate base a pointless exercise.

A fair rate of return is determined exogenously from the ratemaking process. That is, the investor required rate of return is determined entirely by the market price investors are willing to pay based on the perceived riskiness of cash flows. Thus, investors, not the Commission, determine the required rate of return. As the Commission stated in Docket No. 92-0448/93-0239 Consol., "The Commission, in authorizing a rate of return, makes an estimate of what the investor is demanding. It is the Commission that reacts to the investor, not vice-versa."<sup>49</sup> The Commission does not control what investors pay for a share of stock, nor does it control investors' expectations for dividends and growth; the Commission simply evaluates investors' behavior to ascertain investors' rate of return requirements. The Commission then applies that market-determined rate of return to the amount of equity capital determined to be serving customers.

The erroneous equation of primary and secondary investing also leads to Ms. McShane's incorrect comparison of book values and market values. As indicated above, the amount of money contributed to the company for the purchase of assets that serve ratepayers is not necessarily equal to the market value of the company's stock. This is because the market value of a company's stock is based on the cash

---

<sup>49</sup> Order, Docket No. 92-0448/93-0239 Consol., October 11, 1994, p. 172.

783 flows expected to be generated by all of its assets discounted by the investor  
784 required rate of return. If the expected rate of return matches the investor required  
785 rate of return, then the market value of the firm will remain equal to book value.  
786 However, if the expected rate of return exceeds the investor required rate of return,  
787 then demand for the company's stock will increase as investors rush to get in on  
788 those abnormally high returns. This increased demand for the company's stock will  
789 cause the stock's market value to rise until the expected rate of return on market  
790 value equals the required rate of return. Such a scenario would explain why market  
791 values of utilities have grown to exceed their book values. Utilities frequently have  
792 other sources of cash flows in addition to the operating income component of the  
793 revenue requirement set by the Commission. For example, many utility companies  
794 own non-regulated assets that generate earnings for investors. Also, investment tax  
795 credits, deferred taxes, and positive working capital balances may contribute to  
796 utilities' earnings. The Commission's revenue requirement calculation does not  
797 recognize these "other" earnings and, thus, the Commission does not adjust its  
798 revenue requirement downward to offset them. Therefore, some utilities may be  
799 able to earn more than their ratemaking operating income, which, as explained  
800 above, would drive the market values of utilities above their book values. Clearly,  
801 the Commission should not further increase allowed rates of return when the  
802 benefits that utilities receive from other sources of earnings not recognized by the  
803 rate setting process increase stock prices above book value. To do so would  
804 compensate utilities twice for the same sources of cash flow.

805 Finally, allowing upward adjustments to the allowed rate of return based on a market  
806 to book value ratio greater than one, when taken to its logical conclusion, would  
807 require the Commission to continually make upward adjustments to the allowed rate

of return, since such an upward adjustment would tend to again increase the market to book value ratio, thereby warranting another increase, resulting in a never ending upward movement in the allowed rate of return.

**Q. Has the Commission ruled on this argument before?**

A. Yes. This argument was presented in Consumers Illinois Water rate case Docket No. 97-0351 and in AmerenCIPS and AmerenUE's initial delivery service tariff case, Docket No. 99-0121. The Amended Order from Docket No. 97-0351 states that "[the Commission does] not agree that, as stock prices have risen, the problems associated with reliance on the traditional DCF theory in rate cases also have increased," and that "[the Commission continues] to rely upon the traditional DCF approach."<sup>50</sup> In Docket No. 99-0121, Ameren Company witness Robert C. Porter based his cost of equity recommendation entirely on his Comparable Earnings model analysis, arguing that it would be inappropriate to apply an unadjusted DCF-derived estimate based on the market value of common equity to the book value of common equity to determine the revenue requirements.<sup>51</sup> However, the Commission Order from Docket No. 99-0121 rejected his argument and stated that "the Commission has consistently used and adopted estimates based on DCF and CAPM models and has not been presented with any reason to depart from this practice."<sup>52</sup>

---

<sup>50</sup> Amended Order, Docket No. 97-0351, p. 42.

<sup>51</sup> Docket No. 99-0121, Exhibit Ameren 6.0, pp. 6 and 13.

<sup>52</sup> Order, Docket No. 99-0121, p. 68.

827 **Q. Are there any significant differences between the market to book arguments**  
828 **rejected by the Commission in past cases and those presented by Ms.**  
829 **McShane?**

830 A. No. Both are based on the false argument that it is necessary to make an  
831 adjustment to a cost of equity estimate derived from market values of equity when  
832 that estimate is to be applied to book values of equity to determine utility rates.  
833 Thus, the Commission should disregard Ms. McShane's market to book  
834 adjustments.

835 **Q. Did Ms. McShane present any other arguments regarding adjustments to**  
836 **her DCF and CAPM results?**

837 A. Yes. Ms. McShane argued that if the Commission should reject the full market to  
838 book adjustment she applied to the results of her equity risk premium test, then, at  
839 minimum, a financing flexibility adjustment should be allowed for the recovery of all  
840 flotation costs associated with equity financing.<sup>53</sup> However, she has provided no  
841 basis for her argument. In fact, as noted previously, both AmerenCIPS and  
842 AmerenUE acknowledge that they do not have any specific costs of issuing  
843 common equity recorded on their books and records for which they are requesting  
844 compensation in this proceeding.<sup>54</sup>

845 **Q. Has the Commission ruled on the application of generalized flotation cost**  
846 **adjustments in previous cases?**

847 A. Yes. The Commission has rejected the use of generalized flotation cost  
848 adjustments in previous cases. The Commission Order from Commonwealth

---

<sup>53</sup> AmerenCIPS Exhibit No. 4.0, p. 29, and AmerenUE Exhibit No. 4.0, p. 29.

<sup>54</sup> AmerenCIPS response to Staff data request MGM 1.12 and AmerenUE response to Staff data request MGM 1.11.

Edison Company, Docket No. 94-0065 states that “the Commission has traditionally approved [flotation cost] adjustments only when the utility anticipates it will issue stock in the test year or when it has been demonstrated that costs incurred prior to the test year have not been recovered previously through rates,” and cites Orders from Dockets Nos. 91-0193, 91-0010, and 91-0147 as examples of its previous decisions on the issue. Thus, a flotation cost adjustment for past issuance expenses was rejected in Docket No. 94-0065 because the Commission found that “Edison was not anticipating the issuance of new common stock in the near future and that there was no compelling evidence that Edison had not recovered fully past flotation costs.” Moreover, the Order states that “Edison has the burden of proof on this issue.”<sup>55</sup>

**Q. Does the flotation cost adjustment argument presented by Ms. McShane differ significantly from the arguments rejected in those cases?**

A. No, it does not. Ms. McShane presented a flotation cost adjustment recommendation that was not based on costs specifically incurred by the Companies. As with the cases cited above, Ms. McShane has not demonstrated that either the Companies (or their parent) anticipate issuing stock in the test year or that costs actually incurred by the Companies prior to the test year have not been recovered previously through rates. Thus, Ms. McShane’s argument for a flotation cost adjustment is unsubstantiated and should be rejected.

**Q. If Ms. McShane’s analysis were corrected to eliminate the results of her Comparable Earnings methodology and the adjustments made to her risk**

---

<sup>55</sup> Order, Docket 94-0065, pp. 94-95.

871 **premium and DCF results, what would the resulting cost of equity estimate**  
872 **be?**

873 A. With the elimination of those errors, Ms. McShane's analysis would produce a cost  
874 of equity estimate for AmerenCIPS ranging from 11.5-11.75%, with a midpoint of  
875 11.625%, for her DCF methodology and from 10.5-11.5%, with a midpoint of  
876 11.0%, for her risk premium methodology.<sup>56</sup> These results are slightly higher than  
877 my 10.62% cost of common equity proposal for AmerenCIPS.<sup>57</sup>

878 **Q. Why, after making those adjustments, does Ms. McShane's estimate still**  
879 **exceed your estimate?**

880 A. The difference between our results appears to be primarily due to a shift in  
881 prevailing market sentiments (i.e., changes in stock prices and growth rate  
882 expectations) during the approximately six months between the times our analyses  
883 were performed.<sup>58</sup>

884 **Q. Does this conclude your direct testimony?**

885 A. Yes, it does.

---

<sup>56</sup> AmerenCIPS Exhibit No. 4.0, pp. 27 and 46 and AmerenUE Exhibit No. 4.0, p. 28 and 47.

<sup>57</sup> The cost of equity estimates noted here would be adjusted downward by approximately 25 basis points for both Ms. McShane's and my AmerenUE estimates to reflect the difference in risk between our samples and AmerenUE.

<sup>58</sup> I could not verify Ms. McShane's IBES growth rate estimates, as they did not correspond to the September 2002 IBES estimates available to Staff. Also, Ms. McShane's use of October 1, 2002 Zack's estimates is not consistent with her use of stock price data from July through September of 2002. In addition, the October 1, 2002 Zacks estimate for AGL Resources includes a low estimate of 7.00% and a high estimate of 30.00%. The 30% estimate, which Zacks has subsequently removed, seems to be an error, which suggests that the average growth rate estimate for AGL Resources used by Ms. McShane is overstated.

### AmerenCIPS

#### Weighted Average Cost of Capital June 30, 2002

#### Company Proposal

	<u>Amount</u>	<u>Percent of Total Capital</u>	<u>Cost</u>	<u>Weighted Cost</u>
Long-term Debt	\$547,322,289	46.927%	6.672%	3.131%
Preferred Stock	\$78,387,002	6.721%	4.369%	0.294%
Common Equity	<u>\$540,611,588</u>	<u>46.352%</u>	<u>13.000%</u>	<u>6.026%</u>
Total Capital	\$1,166,320,879	100.00%		
<b>Weighted Average Cost of Capital</b>				<b>9.451%</b>

#### Staff Proposal

	<u>Amount</u>	<u>Percent of Total Capital</u>	<u>Cost</u>	<u>Weighted Cost</u>
Long-term Debt	\$597,467,757	49.12%	6.74%	3.31%
Preferred Stock	\$78,387,002	6.44%	3.99%	0.26%
Common Equity	<u>\$540,611,588</u>	<u>44.44%</u>	<u>10.62%</u>	<u>4.72%</u>
Total Capital	\$1,216,466,347	100.00%		
<b>Weighted Average Cost of Capital</b>				<b>8.29%</b>

## AmerenUE

### Weighted Average Cost of Capital June 30, 2002

#### Company Proposal

	<u>Amount</u>	<u>Percent of Total Capital</u>	<u>Cost</u>	<u>Weighted Cost</u>
Long-term Debt	\$1,637,741,353	37.094%	5.941%	2.204%
Preferred Stock	\$114,502,040	2.593%	5.189%	0.135%
Common Equity	<u>\$2,662,834,920</u>	<u>60.312%</u>	<u>12.750%</u>	<u>7.690%</u>
Total Capital	\$4,415,078,313	100.00%		
<b>Weighted Average Cost of Capital</b>				<b>10.029%</b>

#### Staff Proposal

(imputed capital structure)

	<u>Percent of Total Capital</u>	<u>Cost</u>	<u>Weighted Cost</u>
Short-term Debt	2.6%	1.39%	0.04%
Long-term Debt	42.4%	5.60%	2.38%
Preferred Stock	2.3%	5.19%	0.12%
Common Equity	<u>52.7%</u>	<u>10.37%</u>	<u>5.46%</u>
Total Capital	100.0%		
<b>Weighted Average Cost of Capital</b>			<b>8.00%</b>

**AmerenUE**

Weighted Average Cost of Capital  
June 30, 2002

**Company Proposal with Staff Adjustments**  
(actual June 30, 2003 Capital structure)

	<u>Amount</u>	<u>Percent of Total Capital</u>
Short-term Debt	\$98,086,145	2.18%
Long-term Debt	\$1,635,699,280	36.32%
Preferred Stock	\$114,502,040	2.54%
Common Equity	<u>\$2,655,076,011</u>	<u>58.96%</u>
Total Capital	\$4,503,363,476	100.00%

**AmerenUE****Balance of Short-term Debt  
June 30, 2002****End of Month Balance**

Date (A)	Gross Short-term Debt Outstanding (B)	CWIP (C)	CWIP Accruing AFUDC (D)	Net Short-term Debt Outstanding (E)	Monthly Average (F)
Dec-01	\$ 101,840,000	\$ 441,239,521	\$ 289,839,299	\$ 66,896,170	
Jan-02	191,140,000	424,399,324	276,198,217	124,393,523	\$ 95,644,847
Feb-02	184,690,000	437,869,603	288,966,993	121,884,035	123,138,779
Mar-02	192,050,000	428,494,999	302,747,640	135,690,462	128,787,248
Apr-02	198,150,000	433,177,031	289,783,699	132,556,982	134,123,722
May-02	161,850,000	308,098,444	292,876,306	153,853,520	143,205,251
Jun-02	259,650,000	305,546,717	177,248,534	150,623,716	152,238,618
Jul-02	174,250,000	319,433,170	161,169,863	87,917,760	119,270,738
Aug-02	60,050,000	341,376,855	173,555,485	30,529,331	59,223,545
Sep-02	108,900,000	351,341,248	212,755,785	65,944,734	48,237,032
Oct-02	48,900,000	374,895,074	222,548,094	29,028,394	47,486,564
Nov-02	54,100,000	379,236,215	246,647,900	35,185,594	32,106,994
Dec-02	264,500,000	422,069,510	242,478,875	151,955,213	93,570,404
<b>Average</b>					<b>\$ 98,086,145</b>

**Notes:**

Column (B) excludes proceeds from short-term debt issuances that AmerenUE lent to other member companies of the Ameren utility money pool.

Column (E) = the greater of [Column (B) - Column (D)] or [Column (D) \* (Column (B) / Column (C))]

Column (F) = [Column (E) + Column (E) from the previous row] / 2

Source: Company response to Staff Data Request MGM 1.02

**AmerenCIPS**

Embedded Cost of Long-term Debt  
June 30, 2002

	Coupon Rate, Debt Issue Type, (A)	Date Issued (B)	Maturity Date (C)	Original Principal Amount (D)	Face Amount Outstanding (E)	Unamortized	Unamortized	Carrying Value (H)	Coupon Interest Expense (I)	Amortization	Total	
						Debt Discount or (Premium) (F)	Debt Expense (G)			of Debt Discount or (Premium) (J)		Amortization of Debt Expense (K)
First Mortgage Bonds												
1	7.50% Series X	1-Jul-92	1-Jul-07	\$50,000,000	\$50,000,000	\$242,425	\$55,967	\$49,701,608	\$3,750,000	\$48,432	\$11,181	\$3,809,613
2	6.75% Series Y	15-Sep-92	15-Sep-02	23,000,000	23,000,000	5,472	1,807	22,992,720	1,552,500	25,940	8,568	1,587,008
3	6.38% Series Z	1-Apr-93	1-Apr-03	40,000,000	40,000,000	13,868	29,499	39,956,633	2,550,000	18,406	39,153	2,607,560
4	6.49% Series 95-1	1-Jun-95	1-Jun-05	20,000,000	20,000,000		87,214	19,912,786	1,298,000		29,834	1,327,834
5	6.96% Series 97-1	15-Mar-97	15-Sep-02	5,000,000	5,000,000		1,633	4,998,367	348,000		7,741	355,741
6	6.99% Series 97-1	15-Mar-97	15-Mar-03	5,000,000	5,000,000		5,142	4,994,858	349,500		7,275	356,775
7	7.05% Series 97-2	10-Jun-97	1-Jun-06	20,000,000	20,000,000		89,447	19,910,553	1,410,000		22,799	1,432,799
8	7.61% Series 97-2	10-Jun-97	1-Jun-17	40,000,000	40,000,000		287,381	39,712,619	3,044,000		19,247	3,063,247
9	5.38% Series AA	15-Dec-98	15-Dec-08	15,000,000	15,000,000	40,317	76,625	14,883,058	806,250	6,235	11,851	824,336
10	6.13% Series AA	15-Dec-98	15-Dec-28	60,000,000	60,000,000	357,646	508,251	59,134,103	3,675,000	13,507	19,194	3,707,701
11	6.63% Series BB	13-Jun-01	15-Jun-11	150,000,000	150,000,000	1,151,807	377,290	148,470,903	9,937,500	128,487	42,088	10,108,075
				\$428,000,000	\$428,000,000	\$1,811,535	\$1,520,257	\$424,668,208	\$28,720,750	\$241,007	\$218,931	\$29,180,689
Pollution Control Bonds												
12	6.38% Series 1993 A	1-Jan-93	1-Jan-28	\$35,000,000	\$35,000,000	\$90,592	\$432,454	\$34,476,954	\$2,231,250	\$3,549	\$16,944	\$2,251,743
13	5.00% Series 1993 B-1*	1-Jun-93	1-Jun-28	17,500,000	17,500,000		318,324	17,181,676	875,000		12,272	887,272
14	5.90% Series 1993 B-2	1-Jun-93	1-Jun-28	17,500,000	17,500,000		243,472	17,256,528	1,032,500		9,386	1,041,886
15	5.95% Series 1993 C-1*	15-Aug-93	15-Aug-26	35,000,000	35,000,000		705,833	34,294,167	2,082,500		29,236	2,111,736
16	5.70% Series 1993 C-2	15-Aug-93	15-Aug-26	25,000,000	25,000,000		232,695	24,767,305	1,425,000		9,638	1,434,638
17	5.50% Series 2000A	9-Mar-00	1-Mar-14	51,100,000	51,100,000		749,240	50,350,760	2,810,500		64,165	2,874,665
				\$181,100,000	\$181,100,000	\$90,592	\$2,682,018	\$178,327,391	\$10,456,750	\$3,549	\$141,641	\$10,601,941

					Unamortized		Amortization				
Coupon Rate, Debt Issue Type, (A)	Date Issued (B)	Maturity Date (C)	Original Principal Amount (D)	Face Amount Outstanding (E)	Debt Discount or (Premium) (F)	Unamortized Debt Expense (G)	Carrying Value (H)	Coupon Interest Expense (I)	of Debt Discount or (Premium) (J)	Amortization of Debt Expense (K)	Total Expense (L)
Retired Issues											
18 13.63% Series U - FMB	31-Mar-86	1-Jan-16				\$781,022	(\$781,022)			\$57,789	\$57,789
19 9.00% Series D - FMB	31-Mar-90	1-Feb-14				241,945	(241,945)			\$20,857	\$20,857
20 Var Series A - FMB	31-Mar-90	1-Apr-13				81,386	(81,386)			\$7,563	\$7,563
21 9.13% Series T - FMB	31-May-92	1-May-22				1,239,123	(1,239,123)			\$62,427	\$62,427
22 8.45% Series S - FMB	30-Jun-92	1-Jun-07				582,697	(582,697)			\$118,355	\$118,355
23 6.75% Series O - FMB	31-Aug-92	1-Aug-02				3,526	(3,526)			\$40,222	\$40,222
24 6.38% Series Z - FMB	1-Apr-93	1-Apr-03				50,156	(50,156)			\$66,571	\$66,571
25 8.50% Series W - FMB	15-Dec-98	1-Apr-21				1,954,461	(1,954,461)			\$104,143	\$104,143
26 6.38% Series B - PC	1-Jan-93	1-May-28				328,452	(328,452)			\$12,704	\$12,704
27 6.75% Series C - PC	1-Jun-93	1-Jun-28				144,472	(144,472)			\$5,570	\$5,570
28 5.85% Series A - PC	1-Aug-93	1-Aug-26				118,624	(118,624)			\$4,921	\$4,921
29 6.63% Series Newton - PC	1-Aug-95	1-Aug-09				1,978	(1,978)			\$279	\$279
						\$5,527,842	(\$5,527,842)			\$501,400	\$501,400
				\$609,100,000	\$609,100,000	\$1,902,127	\$9,730,116	\$597,467,757	\$39,177,500	\$244,557	\$861,972
											\$40,284,029
6.74%											

**AmerenUE**

Embedded Cost of Long-term Debt  
June 30, 2002

Debt Issue Type, Coupon Rate (A)	Date Issued (B)	Maturity Date (C)	Original Principal Amount (D)	Face Amount Outstanding (E)	Unamortized Debt Discount or (Premium) (F)	Unamortized Debt Expense (G)	Carrying Value (H)	Coupon Interest Expense (I)	Amortization of Debt Discount or (Premium) (J)	Amortization of Debt Expense (K)	Total Expense (L)
<b>First Mortgage Bonds</b>											
1 7.65% Series 7.65%	28-Jan-92	15-Jul-03	\$100,000,000	\$100,000,000		\$71,363	\$99,928,637	\$7,650,000		\$68,546	\$7,718,546
2 7.38% Series 7.375%	22-Oct-92	15-Dec-04	85,000,000	85,000,000	\$60,143	126,909	84,812,948	6,268,750	\$24,419	51,526	6,344,694
3 8.00% Series 8.0%	22-Oct-92	15-Dec-22	85,000,000	85,000,000	716,963	534,647	83,748,391	6,800,000	35,018	26,113	6,861,132
4 6.88% Series 6.875%	1-Aug-93	1-Aug-04	188,000,000	188,000,000	251,564	244,874	187,503,563	12,925,000	120,342	117,141	13,162,483
5 6.75% Series 6.75%	1-May-93	1-May-08	148,000,000	148,000,000	244,484	473,697	147,281,819	9,990,000	41,856	81,097	10,112,953
6 7.15% Series 7.15%	1-Aug-93	1-Aug-23	75,000,000	75,000,000	591,638	584,047	73,824,315	5,362,500	28,038	27,678	5,418,216
7 5.45% Series 5.45%*	1-Oct-93	1-Oct-28	44,000,000	44,000,000	256,139	470,375	43,273,486	2,398,000	9,749	17,903	2,425,651
8 7.00% Series 7.0%	15-Jan-94	15-Jan-24	100,000,000	100,000,000	136,774	667,550	99,195,676	7,000,000	6,344	30,964	7,037,308
9 5.25% Series AA	22-Aug-02	1-Sep-12	173,000,000	173,000,000	202,410	1,374,500	171,423,090	9,082,500	20,169	136,962	9,239,631
10 5.50% Series BB	10-Mar-03	15-Mar-34	184,000,000	184,000,000	2,055,280	1,860,000	180,084,720	10,120,000	66,223	59,931	10,246,154
			<b>\$1,182,000,000</b>	<b>\$1,182,000,000</b>	<b>\$4,515,395</b>	<b>\$6,407,961</b>	<b>\$1,171,076,645</b>	<b>\$77,596,750</b>	<b>\$352,158</b>	<b>\$617,862</b>	<b>\$78,566,770</b>
<b>Environmental Improvement Revenue Bonds (Variable Interest Rates)</b>											
11 1.14% 1991**	17-Dec-91	1-Dec-20	\$42,585,000	\$42,585,000		\$296,590	\$42,288,410	\$485,469		\$16,088	\$501,557
12 1.14% 1992**	3-Dec-92	1-Dec-22	47,500,000	47,500,000		325,355	47,174,645	541,500		15,921	557,421
13 1.14% 1998 A, B, & C**	1-Sep-98	1-Sep-33	160,000,000	160,000,000		1,497,635	158,502,365	1,824,000		48,010	1,872,010
14 1.14% 2000 A, B, C **	9-Mar-00	1-Mar-35	186,500,000	186,500,000		1,385,530	185,114,470	2,126,100		42,383	2,168,483
			<b>\$436,585,000</b>	<b>\$436,585,000</b>		<b>\$3,505,110</b>	<b>\$433,079,890</b>	<b>\$4,977,069</b>		<b>\$122,402</b>	<b>\$5,099,471</b>
<b>Interest Debentures</b>											
16 7.69% Interest Debentures	16-Dec-96	15-Dec-36	\$65,500,000	\$65,500,000	\$494,371	\$100,613	\$64,905,016	\$5,036,950	\$14,336	\$2,918	\$5,054,203
			<b>\$65,500,000</b>	<b>\$65,500,000</b>	<b>\$494,371</b>	<b>\$100,613</b>	<b>\$64,905,016</b>	<b>\$5,036,950</b>	<b>\$14,336</b>	<b>\$2,918</b>	<b>\$5,054,203</b>

					Unamortized					Amortization		
	Debt Issue Type, Coupon Rate (A)	Date Issued (B)	Maturity Date (C)	Original Principal Amount (D)	Face Amount Outstanding (E)	Debt Discount or (Premium) (F)	Unamortized Debt Expense (G)	Carrying Value (H)	Coupon Interest Expense (I)	of Debt Discount or (Premium) (J)	Amortization of Debt Expense (K)	Total Expense (L)
	Retired Issues											
17	Series 8.25%	1-Jul-02	15-Oct-22				\$5,260,374	(\$5,260,374)			\$259,044	\$259,044
18	Series 8.75%	1-Sep-02	1-Dec-21				6,547,747	(6,547,747)			336,894	336,894
19	7% FMB	1-Jun-93	1-Apr-08				\$209,924	(209,924)			\$36,452	\$36,452
20	7.375% FMB	1-Jun-93	1-Apr-08				185,153	(185,153)			32,151	32,151
21	7% FMB	1-Nov-92	1-Aug-11				349,694	(349,694)			38,457	38,457
22	9% FMB	1-Mar-92	1-Jun-03				134,202	(134,202)			145,785	145,785
23	7.875% FMB	1-Mar-93	1-Jul-04				185,736	(185,736)			92,614	92,614
24	7.625% FMB	1-Jun-93	1-Apr-08				379,542	(379,542)			65,905	65,905
25	8.125% FMB	1-Mar-93	1-Jul-04				251,774	(251,774)			125,543	125,543
26	8.375% FMB	1-Mar-93	1-Jul-04				382,160	(382,160)			190,558	190,558
27	10.5% FMB	1-Apr-92	1-Aug-11				167,312	(167,312)			18,400	18,400
28	8.875% FMB	1-Nov-92	1-Aug-11				1,416,595	(1,416,595)			155,787	155,787
29	5.8% FMB	1-Mar-92	1-Dec-20				160,526	(160,526)			8,707	8,707
30	8.625% FMB	1-Jan-93	1-Feb-14				1,425,628	(1,425,628)			122,899	122,899
31	9.35% FMB	1-Jan-92	1-Dec-21				1,546,229	(1,546,229)			79,556	79,556
32	9.95% FMB	1-Dec-91	1-Nov-21				1,288,884	(1,288,884)			66,597	66,597
33	9.25%-9.625% FMB	1-Aug-90	1-Apr-20				1,833,778	(1,833,778)			103,212	103,212
34	9.375% FMB	1-Jan-93	1-Feb-14				3,790,332	(3,790,332)			326,753	326,753
35	8.875% FMB	1-Mar-92	1-Dec-02				111,117	(111,117)			263,362	263,362
36	7.40% FMB	1-Mar-00	1-Mar-35				2,441,313	(2,441,313)			74,680	74,680
37	10.75% FMB	1-Dec-91	1-Nov-21				19,807	(19,807)			1,023	1,023
38	8% FMB	1-Nov-92	1-Aug-11				50,271	(50,271)			5,528	5,528
39	9.375% FMB	1-Jan-92	1-Nov-21				151,236	(151,236)			7,814	7,814
40	7.75% FMB	1-Jun-93	1-Apr-08				72,004	(72,004)			12,503	12,503
41	10% FMB	1-Dec-91	1-Nov-21				225,106	(225,106)			11,631	11,631
42	9.375% FMB	1-Jan-92	1-Nov-21				44,742	(44,742)			2,312	2,312
43	8.5% FMB	1-Mar-92	1-Jun-03				10,786	(10,786)			11,717	11,717
44	8.25% FMB	1-Nov-92	1-Aug-11				56,211	(56,211)			6,182	6,182
45	7.95% FMB	1-Nov-92	1-Aug-11				33,440	(33,440)			3,678	3,678

					Unamortized		Amortization					
Debt Issue Type, Coupon Rate (A)	Date Issued (B)	Maturity Date (C)	Original Principal Amount (D)	Face Amount Outstanding (E)	Debt Discount or (Premium) (F)	Unamortized Debt Expense (G)	Carrying Value (H)	Coupon Interest Expense (I)	Amortization of Debt Discount or (Premium) (J)	Amortization of Debt Expense (K)	Total Expense (L)	
Retired Issues (continued)												
46	9.25% FMB	1-Jan-92	1-Nov-21			74,802	(74,802)			3,865	3,865	
47	1974 PCB	1-Mar-92	1-Dec-20			64,610	(64,610)			3,505	3,505	
48	1975 PCB	1-Nov-77	1-Oct-05			599,877	(599,877)			184,151	184,151	
49	1981 PCB	1-Jun-85	1-May-15			486,902	(486,902)			37,909	37,909	
50	1982 PCB	1-Jun-85	1-May-15			40,614	(40,614)			3,162	3,162	
51	1984 A & B PCB	1-Dec-98	1-Aug-33			1,961,454	(1,961,454)			63,050	63,050	
52	1984 C PCB	1-Sep-93	1-Nov-22			439,898	(439,898)			21,613	21,613	
53	1985 A & B PCB	1-Mar-00	1-Mar-35			962,490	(962,490)			29,443	29,443	
						\$33,362,271	(\$33,362,271)			\$2,952,444	\$2,952,444	
					\$1,684,085,000	\$5,009,766	\$43,375,955	\$1,635,699,280	\$87,610,769	\$366,494	\$3,695,625	\$91,672,887
											5.60%	

\*Environmental Improvement Series backed by First Mortgage Bonds.

\*\*The effective rates on these Environmental Improvement revenue bonds were determined by using the March 19, 2003 Municipal Swap Index from bondmarket.com, which is a 7-day high grade market index composed of tax-exempt variable rate debt obligations.

**AmerenCIPS**

Preferred Stock  
June 30, 2002

Series (A)	Date of Issuance (B)	Dividend Rate (C)	Shares Outstanding (D)	Amount Outstanding (E)	Premium or (Discount) (F)	Issuance Expense (G)	Net Proceeds (H)	Annual Dividends (I)	Embedded Cost of Preferred Stock (J)	Weighted Cost of Preferred Stock (K)
1 5.16% Series, Perpetual, \$100 par	1-Nov-59	5.160%	50,000	\$ 5,000,000	\$ 9,709	\$ 34,665	\$ 4,975,044	\$ 258,000	5.19%	0.33%
2 4.92% Series, Perpetual, \$100 par	1-Oct-52	4.920%	50,000	5,000,000	125,000	118,095	5,006,905	246,000	4.91%	0.31%
3 4.90% Series, Perpetual, \$100 par	1-Nov-62	4.900%	75,000	7,500,000			7,500,000	367,500	4.90%	0.47%
4 4.25% Series, Perpetual, \$100 par	1-May-54	4.250%	50,000	5,000,000			5,000,000	212,500	4.25%	0.27%
5 4.00% Series, Perpetual, \$100 par	1-Nov-46	4.000%	150,000	15,000,000		513,310	14,486,690	600,000	4.14%	0.77%
6 6.625% Series, Perpetual, \$100 par	1-Oct-93	6.625%	125,000	12,500,000		493,655	12,006,345	828,125	6.90%	1.06%
7 1993 Auction Series, Perpetual, \$100 par	1-May-93	2.058%	300,000	30,000,000		587,982	29,412,018	617,400	2.10%	0.79%
<b>Total</b>				<b>\$ 80,000,000</b>	<b>\$ 134,709</b>	<b>\$ 1,747,707</b>	<b>\$ 78,387,002</b>	<b>\$ 3,129,525</b>		<b>3.99%</b>

Notes: Column(H) = Column(E) + Column(F) - Column(G)  
Column(I) = Column(E) X Column(C)  
Column(J) = Column(I) / Column(H)

Sources: AmerenCIPS Exhibit No. 3.4, 2001 FERC Form No. 1, and Company response to Staff data request SK 6.2 in ICC Docket No 00-0802.

**AmerenUE**

Preferred Stock  
June 30, 2002

Series (A)	Date of Issuance (B)	Dividend Rate (C)	Shares Outstanding (D)	Amount Outstanding (E)	Premium		Issuance Expense (G)	Net Proceeds (H)	Annual Dividends (I)	Embedded	Weighted
					or (Discount) (F)					Cost of Preferred Stock (J)	Cost of Preferred Stock (K)
1 4.50% Series, Perpetual, \$100 par	1-May-41	4.50%	213,595	\$ 21,359,500	\$ 825,000	\$	440,294	\$ 21,744,206	\$ 961,178	4.42%	0.84%
2 5.50% Series, Perpetual, \$100 par	1-Oct-41	5.50%	14,000	1,400,000				1,400,000	77,000	5.50%	0.07%
3 3.70% Series, Perpetual, \$100 par	1-Oct-45	3.70%	40,000	4,000,000	70,000		69,396	4,000,604	148,000	3.70%	0.13%
4 3.50% Series, Perpetual, \$100 par	1-May-46	3.50%	130,000	13,000,000	910,000		252,772	13,657,228	455,000	3.33%	0.40%
5 4.30% Series, Perpetual, \$100 par	1-Jul-46	4.30%	40,000	4,000,000				4,000,000	172,000	4.30%	0.15%
6 4.75% Series, Perpetual, \$100 par	1-Oct-49	4.75%	20,000	2,000,000				2,000,000	95,000	4.75%	0.08%
7 4.00% Series, Perpetual, \$100 par	1-Nov-49	4.00%	150,000	15,000,000	384,000		326,896	15,057,104	600,000	3.98%	0.52%
8 4.56% Series, Perpetual, \$100 par	1-Nov-63	4.56%	200,000	20,000,000	266,000		297,633	19,968,367	912,000	4.57%	0.80%
9 7.64% Series, Perpetual, \$100 par	1-Jan-93	7.64%	330,000	33,000,000			325,469	32,674,531	2,521,200	7.72%	2.20%
<b>Total</b>				<b>\$ 113,759,500</b>	<b>\$ 2,455,000</b>	<b>\$</b>	<b>1,712,460</b>	<b>\$ 114,502,040</b>	<b>\$ 5,941,378</b>		<b>5.19%</b>

Notes: Column(H) = Column(E) + Column(F) - Column(G)  
Column(I) = Column(E) X Column(C)  
Column(J) = Column(I) / Column(H)

Sources: AmerenUE Exhibit No. 3.4, 2001 FERC Form No. 2, and Company response to Staff data request SK 5.2 in ICC Docket No. 00-0802.

AmerenCIPS and AmerenUE

S&P Corporate Credit Ratings and Business Profiles

<b>Gas Sample</b>		
<u>Company</u>	<u>Credit Rating</u>	<u>Business Profile</u>
AGL Resources, Inc.	A–	3
Atmos Energy Corp.	A–	4
Laclede Gas Co.	A+	3
New Jersey Resources	A	2
NICOR, Inc.	AA	3
Northwest Natural Gas Co.	A	3
Peoples Energy Corp.	A–	4
Piedmont Natural Gas Co.	A	3
WGL Holdings, Inc.	AA–	3
Average	<u>A</u>	<u>3.1</u>

AmerenCIPS and AmerenUE

Growth Rate Estimates

<u>Company</u>	<u>Zacks Earnings</u>	<u>IBES Earnings</u>	<u>Average Earnings</u>
AGL Resources, Inc.	5.60%	7.00%	6.30%
Atmos Energy Corp.	6.33	6.43	6.38
Laclede Gas Co.	3.67	4.00	3.84
New Jersey Resources	5.81	7.00	6.41
NICOR, Inc.	4.90	5.17	5.04
Northwest Natural Gas Co.	4.67	4.67	4.67
Peoples Energy Corp.	4.00	5.00	4.50
Piedmont Natural Gas Co.	4.50	4.50	4.50
WGL Holdings, Inc.	3.83	4.20	4.02

AmerenCIPS and AmerenUE  
Quarterly Dividends and Stock Prices  
as of March 21, 2003

Company	Current Quarterly Dividends				Next Dividend Payment Date	Stock Price
	D <sub>0,1</sub>	D <sub>0,2</sub>	D <sub>0,3</sub>	D <sub>0,4</sub>		
AGL Resources, Inc.	\$0.270	\$0.270	\$0.270	\$0.270	06/02/2003	\$23.40
Atmos Energy Corp.	0.295	0.295	0.300	0.300	06/10/2003	21.90
Laclede Gas Co.	0.335	0.335	0.335	0.335	07/01/2003	23.80
New Jersey Resources	0.300	0.300	0.310	0.310	07/01/2003	33.70
NICOR, Inc.	0.460	0.460	0.460	0.460	05/01/2003	27.88
Northwest Natural Gas Co.	0.315	0.315	0.315	0.315	05/15/2003	25.58
Peoples Energy Corp.	0.520	0.520	0.520	0.530	07/15/2003	36.32
Piedmont Natural Gas Co.	0.400	0.400	0.400	0.415	07/15/2003	35.74
WGL Holdings, Inc.	0.318	0.318	0.318	0.318	05/01/2003	26.88

Sources: *The Wall Street Journal*, March 23, 2003.  
Standard & Poor's, *Utility Compustat*.  
<http://biz.yahoo.com>.  
<http://www.cngc.com>.

AmerenCIPS and AmerenUE

Expected Quarterly Dividends

<u>Company</u>	<u>D<sub>1,1</sub></u>	<u>D<sub>1,2</sub></u>	<u>D<sub>1,3</sub></u>	<u>D<sub>1,4</sub></u>
AGL Resources, Inc.	\$0.287	\$0.287	\$0.287	\$0.287
Atmos Energy Corp.	0.300	0.300	0.319	0.319
Laclede Gas Co.	0.348	0.348	0.348	0.348
New Jersey Resources	0.310	0.310	0.330	0.330
NICOR, Inc.	0.465	0.465	0.465	0.465
Northwest Natural Gas Co.	0.330	0.330	0.330	0.330
Peoples Energy Corp.	0.530	0.530	0.530	0.554
Piedmont Natural Gas Co.	0.415	0.415	0.415	0.434
WGL Holdings, Inc.	0.320	0.320	0.320	0.320

AmerenCIPS and AmerenUE

DCF Cost of Common Equity Estimates

**Gas Sample**

<u>Company</u>	<u>Estimate</u>
AGL Resources, Inc.	11.44%
Atmos Energy Corp.	12.30
Laclede Gas Co.	9.88
New Jersey Resources	10.33
NICOR, Inc.	12.11
Northwest Natural Gas Co.	10.07
Peoples Energy Corp.	10.59
Piedmont Natural Gas Co.	9.33
WGL Holdings, Inc.	<u>8.99</u>
Average	<u><u>10.56%</u></u>

## AmerenCIPS and AmerenUE

### Risk Premium Analysis

#### Interest Rates as of March 21, 2003

U.S. Treasury Bills <sup>1</sup>		U.S. Treasury Bonds <sup>2</sup>	
Discount Rate	Effective Yield	Bond Equivalent Yield	Effective Yield
1.16%	1.18%	5.17%	5.24%

#### Risk Premium Cost of Equity Estimates

Proxy Group	Risk-Free Rate	Beta	Risk Premium	Cost of Common Equity
Gas Sample	5.24%	+ 0.60	$\times (14.29\% - 5.24\%) =$	10.67%

<sup>1</sup> U.S. Treasury bill yields are quoted on a 360-day discount basis. The effective yield is determined as follows:

$$Effective\ yield = \left( 1 + \frac{discount\ rate \times \left( \frac{days\ to\ maturity}{360} \right)}{1 - discount\ rate \times \left( \frac{days\ to\ maturity}{360} \right)} \right)^{\left( \frac{365}{days\ to\ maturity} \right)} - 1$$

where *days to maturity* equals ninety-one days.

<sup>2</sup>The bond equivalent yield on U.S. Treasury bonds represents a nominal rather than an effective yield. The effective yield is calculated as follows:

$$Effective\ yield = [1 + (bond\ equivalent\ yield \div 2)]^2 - 1.$$